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A New Species of *Pegomya* (Diptera: Anthomyiidae) Attacking *Boschniakia* (Orobanchaceae)

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Abstract.—The species *Pegomya hyperparasitica* is described from specimens reared from flowering stalks and ovaries of the parasitic plant *Boschniakia hookeri* Walpers.

Boschniakia hookeri Walpers is a perennial parasitic plant associated with several species of Ericaceae in the West Coast region of North America from North California to North British Columbia. The subterranean tuber-like perennial portion (called the soma) of mature parasitic plants is attached to the root of a host, and sends up one or more fleshy flower stalks between early spring and June (Olsen and Olsen, 1979); during this time an anthomyiid fly attacks the inflorescence. The larvae of the fly riddle the flower stalks and the developing seed capsules, reducing or preventing seed production. Although the fly is possibly the most important natural enemy of *Boschniakia hookeri,* the attack is restricted to the inflorescence, leaving the soma unharmed, hence the fly may be considered a parasite of the parasite. The fly is described here to make the name available for use in a publication on the biology of *Boschniakia.* At the very time that these biological studies were occurring, Griffiths was preparing his exhaustive monograph on Nearctic *Pegomyia* (Griffiths, 1982, 1983, 1984a, 1984b). I regret that I was unaware of this revision, as it would have been preferable to have the *Boschniakia* fly described by Griffiths in his monograph.

Pegomya hyperparasitica, NEW SPECIES

Male.—Length: From frons to apex of basal sternite of hypopygium 5.0 mm.

Coloration: Entirely black except for reddish brown frons and buccae; head densely white microtomentose except for ocellar triangle and postocciput; thorax thinly white microtomentose with three faint dark notal vittae barely visible in oblique lighting; tergites more densely white pollinose than thorax, pygidium and wide median stripe on tergites 1 + 2–4 black. Wings tinted blackish.

Head (Fig. 1): Width of frons at narrowest point 0.65 as wide as distance between outer edges of posterior ocelli; frons in lateral view 0.57 as wide as distance from lower edge of eye to oral margin; third antennal segment 0.56 as wide as long; arista with minute slender hairs as short as the wide hairs on the third antennal segment; 8 convergent parorbital bristles, no cruciate bristles on disk of frons, anterior ocellars proclinate, postocciput with numerous small bristles below postocular series, buccae along oral margin with numerous bristles posteriorly, reduced to a single row of strong bristles in anterior half; proboscis short, excluding labellum about as long as front coxae; palps slender, covered with black setulae.

Thorax: The strong dorsal bristles on each side are 3 humerals, 4 posthumerals, 2 presuturals, 2 presutural dorsocentrals, second presutural acrostical, 1 prealar, 1 supralar, 2 postalars, 2 interalars, 3 postsutural dorsocentrals, 1 basal submarginal scutellar, 1 discal scutellar, 1 apical scutellar. Prealar as long as first notopleural. Acrosticals except for second pair weak, similar to marginal scutellar series. Strong pleural bristles are 2 notopleurals, 1 mesopleurals on anteroventral corner, 2 smaller mesopleurals below first notopleural, 6 mesopleurals in series along posterior border, the uppermost bristle conspicuously weaker and shorter than the others, 5 sternopleurals, the ventral pair about half as long as the upper 3. Pteropleuron completely bare.

Legs: Forefemora with 4 rows of posterior bristles; foretibia with medial posterior bristle, 1 apical posterior ventral bristle, 1 dorsal preapical bristle; foretarsi with a short stout basal ventral bristle on first segment, first segment ventrally concave in lateral view, all tarsal segments with a ventral pad of short setulae; midfemora with posterior ventral, anterior ventral, and anterior rows of bristles along length of femur, subapical posterior and subapical posterior dorsal bristles; midtibiae with 1 posterior bristle at end of first third of tibia, 1 posterior and 1 posterior ventral bristle at second third, 1 anterior dorsal bristle at second third, this bristle about one-half the length of posterior dorsals, a ring of apical bristles; midtarsi similar to foretarsi; hindfemora like midfemora; hindtibiae with 1 posterior dorsal and 1 anterior dorsal bristle at end of first third of tibia, 1 anterior dorsal and 1 posterior dorsal near middle, 1 posterior dorsal at apical eighth of tibia, 1 apical anterior dorsal, a series of about 10 shorter anterior bristles along apical half; hindtarsi similar to foretarsi, but ventral bristle at base of first segment about 2.5 times longer.

Abdomen: Tergites 1–5 with a subapical row of about 6 strong bristles, basal sclerite of hypopygium with a subbasal row as well, lateral border of tergite 5 with a row of 5 strong bristles; processes of sternite 5 (Fig. 3) with elongate apices recurved dorsally, with a strong series of flattened marginal setae in medial section, a posteriorly projecting flat projection at basal third of processes; postabdomen (Figs. 6, 7) with mesolobus divided halfway to base, surstyli in dorsal view with apices bent down, interior lobes expanded and bent upwards.

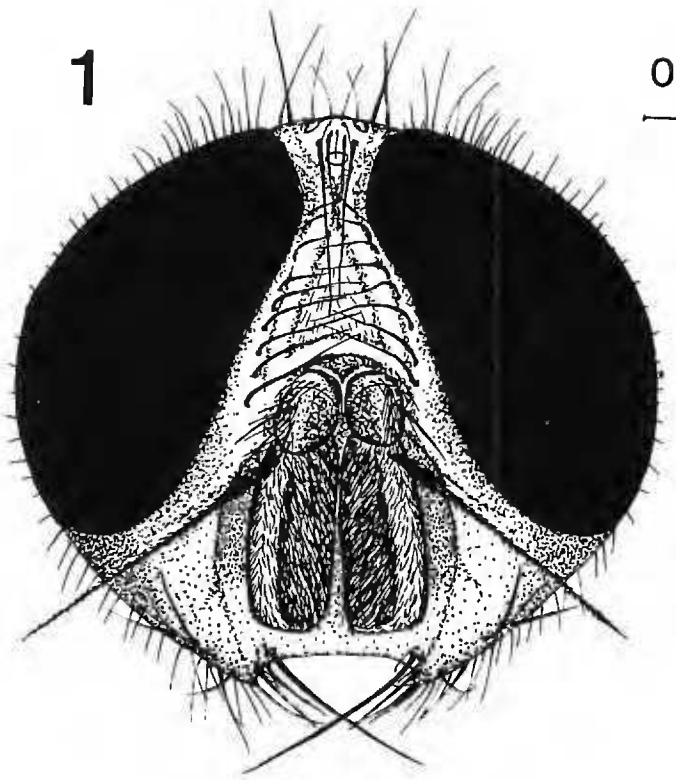
Female.—Length: From frons to apex of fifth tergite 5.3 mm.

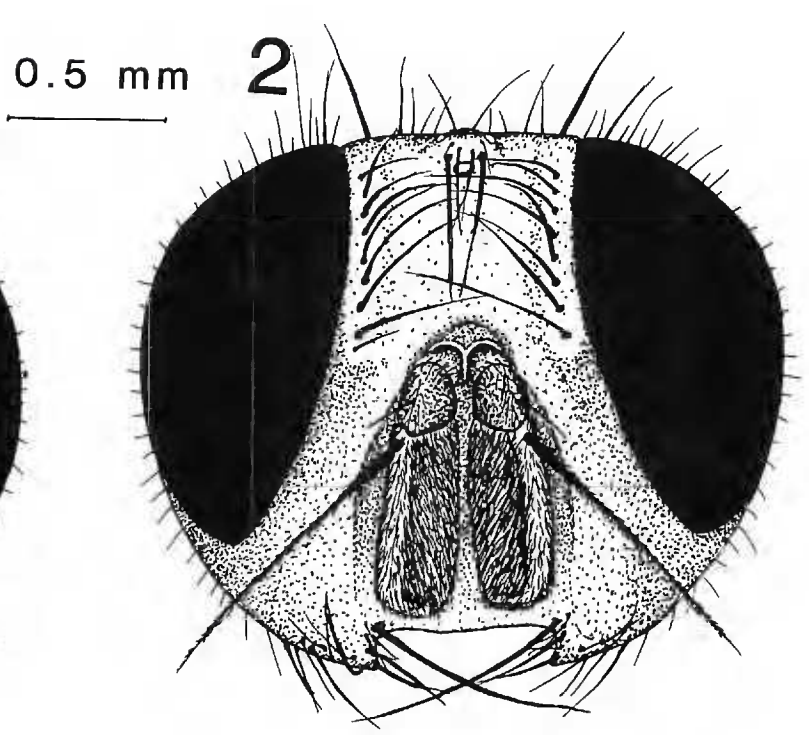
Coloration: Sides of head reddish brown except for black ring around eyes, ring broken ventrally, and gray lower posterior corner of buccae; frons reddish brown, becoming black near ocellar triangle; ocellar, parafrontals, postocciput blackish, grayish brown microtomentose, remainder of head densely white microtomentose; body completely densely grayish brown microtomentose; trochanters, femora, tibiae, light reddish brown; tarsi black; wings tinted brownish.

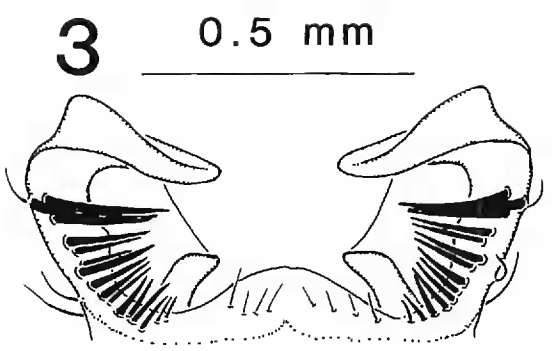
Head (Fig. 2): Width of frons at narrowest point 3.4 times distance between outer edges of posterior ocelli; antennae and bristles as in male.

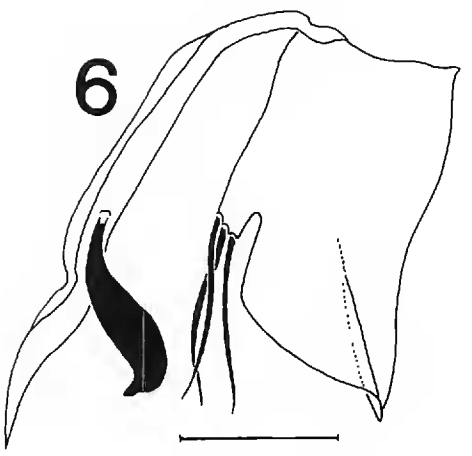
Thorax: Strong dorsal bristles as in male; strong pleural bristles as in male except only 1 lower weaker sternopleural bristle.

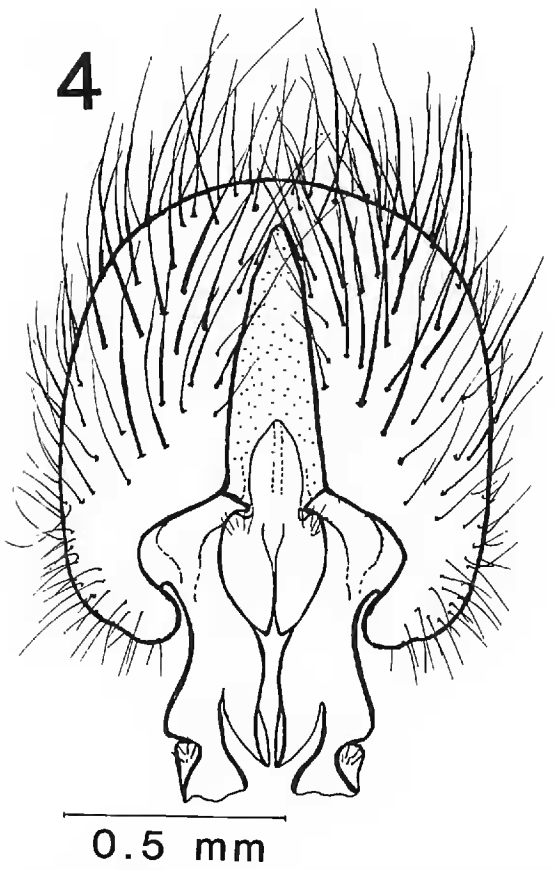
Legs: Strong bristles on front legs as in male except for additional dorsal tibial bristle at second third; forebasitarsus concave with setulae as in male; midfemora as in male except anterior row of bristles has a gap of about 3 bristles in apical third; midtibiae and midtarsi as in male except anterior dorsal bristle at second third of tibia as long as posterior dorsals; metafemur as in male; hindtibiae with

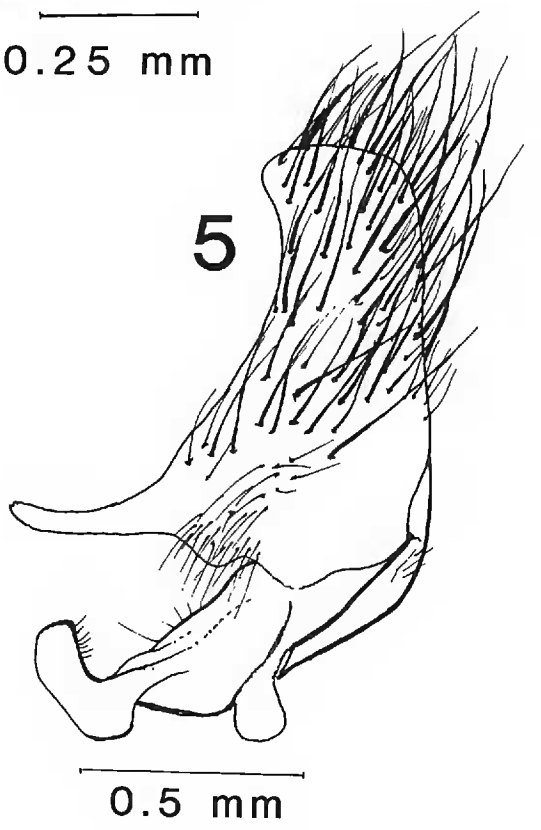




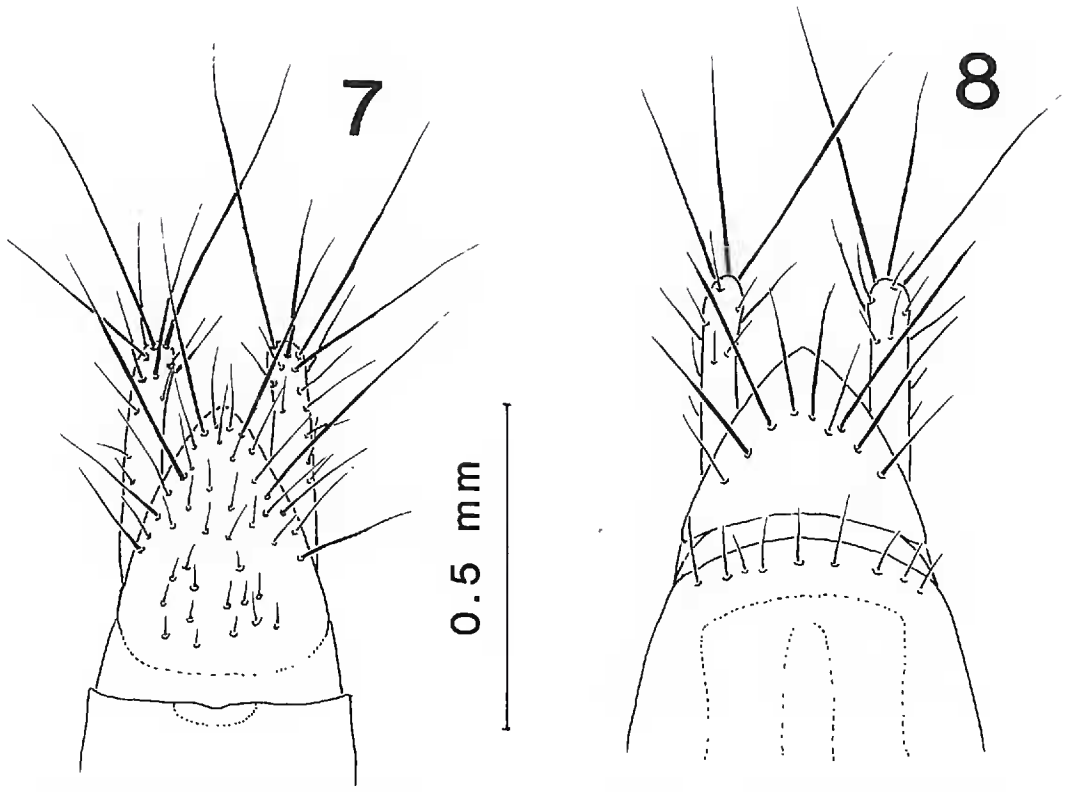








Figures 1–6. *Pegomya hyperparasitica,* n. sp. 1. Frontal view of head, male. 2. Frontal view of head, female. 3. Fifth sternite of male. 4. Gonostyli and mesolobus in posterior view. 5. Gonostylus and mesolobus in left lateral view. 6. Postgonite and pregonite in right lateral view.



Figures 7, 8. *Pegomya hyperparasitica,* n. sp. 7. Hypoproct and cerci of female. 8. Epiproct and cerci of female.

1 posterior dorsal, 1 anterior dorsal at end of first third, one anterior dorsal and 1 posterior dorsal bristle near middle, 1 posterior dorsal at beginning apical eighth, 1 anterior dorsal and 1 anterior ventral at beginning of apical fourth, 1 anterior apical, 1 anterior ventral apical; hindtarsi as in male.

Abdomen: Tergites 1 + 2–5 with subapical row of strong bristles, tergite 1 + 2 with a medial band of strong bristles on each side extending a short distance onto disk; ovipositor in dorsal and ventral view (Figs. 4, 5) conical with a few long marginal bristles; cerci long and slender, each with 3–4 long apical bristles.

Type material.—Holotype and 4 paratype males from Bear Lake, Bremerton, Kitsap Co., Washington, reared from inflorescence of *Boschniakia hookeri* Walpers 21 April 1979. Allotype female same site, ovipositing on flower of *Boschniakia hookeri,* 11 May 1979. Seventeen paratype males and 24 paratype females, same site, same host, emerged 18 April; 1 male paratype same site, same host, emerged 31 March 1979; 1 male paratype same site, same host, emerged 14 April 1979. Holotype, allotype, 10 paratype males, 10 paratype females deposited in the U.S. Museum of Natural History, Washington, D.C.; 4 paratype males, 4 paratype females deposited in the collection of the California Academy of Sciences, San Francisco; 5 paratype males, 5 paratype females deposited in the Canadian National Collection, Ottawa, Ontario; 4 paratype males, 5 paratype females deposited in the collection of the Archbold Biological Station, Lake Placid, Florida.

Etymology.—The specific epithet "hyperparasitica" refers to the parasitic relationship of the fly to a plant which is itself parasitic.

Discussion.—There is little chance of confusing the male of this species with other *Pegomya* as the unusual configurations of the fifth sternite, easily seen in normally pinned specimens, are diagnostic. The description of the processes of *P. umbripennis* Huckett (Huckett, 1966) might give the impression that they are similar to those of *P. hyperparasitica,* but the processes of *P. umbripennis* are not

reflexed so that the apices are directed anteriorally, nor do they have the large strongly flattened setae of *P. hyperparasitica,* and the base of sternite 5 is not membranous as *P. hyperparasitica.* The fifth sternite and hypopygial structures of *P. umbripennis* are illustrated by Griffiths, 1983. The female can be keyed to *P. sombrina* Huckett in Huckett's 1971 key, but the presence of 4 sternopleurals and 4 strong metatibial anterodorsals in *P. hyperparasitica* separates the two species. There are no other Anthomyiidae or Muscoidea reported as breeding in *Boschniakia* or other Nearctic Orobanchaceae. *P. hyperparasitica* does not appear to have close morphological affinities to any of the species or species groups described by Griffiths (George Steyskal, pers. comm.). The strongly enlarged and expanded seta of the postgonite suggests a closer relationship with the mushroom-inhabiting rather than the leaf-mining groups of *Pegomya.*

Acknowledgments

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